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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,693	02/25/2004	Andreas Maurer	1-16513	3690

1678 7590 11/06/2006

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TOLEDO, OH 43604

EXAMINER

WYROZEBSKI LEE, KATARZYNA I

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 11/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/786,693

Applicant(s)

MAURER ET AL.

Examiner

Katarzyna Wyrozebski

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 28-52 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 28-31, 33-45 and 47-52 is/are rejected.
- 7) ☐ Claim(s) 32 and 46 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |  |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. <u>20061016</u> .                           |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application  |
| Paper No(s)/Mail Date _____.   | 6) <input type="checkbox"/> Other: _____.                          |

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In view of the interview conducted on Monday, the 30<sup>th</sup> of October, following non-final office action is re-issued since claims examined were not those from preliminary amendment. Time for submitting a response to the non-final office action will be restarted.

The objections and 112 2<sup>nd</sup> paragraph rejections are hereby withdrawn, since the new claims are in proper form.

### ***Specification***

First paragraph of the specification should contain a statement disclosing domestic priority that includes serial number and the date application has been abandoned. Applicants are requested to incorporate such statement.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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2. Claims 28, 29, 31, 34-37, 18-43, 45, 47, 48 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by BROYDE (US 4,071,479).

The prior art of BROYDE discloses process of recovering PVC and plasticizer mixed with PVC with use of solvent and non-solvent. Solvent is utilized to dissolve the polymer and plasticizer. While in solution impurities are filtered off, next the non-solvent is added to precipitate the polymer and plasticizer. The powder is collected using several methods such as filtration or distillation.

The PVC of BROYDE is scrap PVC, which further comprises additional components such as other resins (polyolefin, crosslinked PVC, rubber), synthetic fibers, wood pulp and the like (col. 7).

The plasticizers of BROYDE include phthalates such as diidooctyl phthalate, diisodecyl phthalate, ditiidecyl phthalate and the like (col. 10).

Solvents of BROYDE include MEK, THF, DMF and the like. Non-solvents include methanol or isopropanol.

At the end of the process, recycled PVC is dried to remove solvents such as MEK. Since the boiling point of MEK is 79-80°C then the heating of PVC has to be higher than 50°C. Both solvents and non-solvents are subjected to distillation in order to recover the solvents and separate all additives dissolved therein.

Recovered PVC is mixed with virgin PVC for re-use. Recovered PVC is combined with new materials and additives and formed into extrudable composition to be shaped into insulating article (col. 14).

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In the light of the above disclosure, the prior art of BROYDE anticipates claims rejected above.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 28-31, 34-43, 45, 47, 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over BROYDE (US 4,071,479) in view of MENDIRATTA (US 4,668,768).

The discussion of the prior art of BROYDE from paragraph 5 of this office action is incorporated here by reference.

In addition, the process of BROYDE is conducted in a plant or facilities; therefore obviously the addition of the solvents and non-solvent will not be done using pipettes, but nozzles so that larger volumes of solvents are supplied.

The difference between the present invention and the prior art of BROYDE is recitation of additional third solvents, disclosure of other polymers that can be utilized in the process.

It is well known to anyone having ordinary skill in the polymer science, that different polymers are dissolved by different solvent and sometimes at different temperatures. The process of dissolving target polymer and precipitating it is rather well known, where depending on the polymer a solvent system will change. With that in mind the prior art of MENDIRATTA discloses yet another solvent system that would dissolve target polymer with one solvent and precipitate with another.

The polymers of MENDIRATTA that can undergo the process include polyesters, polycarbonates, polystyrenes and its brominated derivatives, polyphenylene ethers, PET, PBT, synthetic rubbers, as well as other blends of polymers.

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The solvent system comprises of three parts: I – organic solvent; II – water; and III – anti-solvent.

Solvents listed in the disclosure of MENDIRATTA are those that are immiscible with water and include methylene chloride, tetrachloro ethane, dichloroethane, chloroform, dichlorobenzene, benzene, xylene, toluene, pyridine, mesitylene and the like (col. 4).

Anti-solvents listed are miscible with water and include MEK, acetone, cyclohexane, methylcyclohexane, heptane, isoheptane, pentanol, hexanol and the like (col. 3).

With respect to the addition of solvent and then water instead of adding them simultaneously: Steps taken concurrently are generally equivalent to those taken successively. In re White, 1939 CD 365; 39 F2d 974; 5 USPQ 267 (1930). In the instant case, the result or the outcome of the addition would be the same, which is precipitation of the target polymer.

The solvent system is put together such that polymer is dissolved in an organic solvent and water/anti-solvent system is added thereto to afford precipitation.

As it was mentioned above, it is well known to anyone having ordinary skill in the polymer science, that different polymers are dissolved by different solvent and sometimes at different temperatures. The process of dissolving target polymer and precipitating it is rather well known, where depending on the polymer a solvent system will change.

It would therefore be obvious to one having ordinary skill in the art at the time of the instant invention, having read and understood the references at hand, to vary solvent system depending on the type of the polymer utilized and thereby arrive at the instant invention. The net result would produce recycled and precipitated polymer component.

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7. Claims 33, 49-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over BROYDE (US 4,071,479) in view of MENDIRATTA (US 4,668,768) as applied to claims 28-31, 34-43, 45, 47, 48 above, and further in view of GROVER (US 3,256,212).

The discussion of the disclosure of BROYDE from paragraph 5 and MENDIRATTA from paragraph 9 of this office action is incorporated here by reference.

The difference between the present invention and the disclosure of BROYDE and MENDIRATTA is recitation of polyvinyl butyrate and use of the recycled composition in glass related products.

The prior art of GROVER discloses yet another process for recycling polymeric using solvent or non-solvent or combinations thereof to recover PVB, wherein the plasticizer can be removed with proper solvent usually containing an -OH group.

Solvent and non-solvent processes have been shown as capable to recycle PVB and removal of plasticizers and other additives.

It would have been obvious to one having ordinary skill in the art to utilize their process to recycling PVB and thereby arrive at the present invention.

8. Claims 33, 49-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over BROYDE (US 4,071,479) in view of MENDIRATTA (US 4,668,768) as applied to claims 28-31, 34-43, 45, 47, 48 above, and further in view of FARMER (US 5,739,270)

The discussion of the disclosure of BROYDE from paragraph 5 and MENDIRATTA from paragraph 9 of this office action is incorporated here by reference.



The difference between the present invention and the disclosure of BROYDE and MENDIRATTA is recitation of polyvinyl butyrate and use of the recycled composition in glass related products.

With respect to the above difference the prior art of FARMER teaches yet another process that utilizes solvent and non-solvent, wherein non-solvent is CO<sub>2</sub>. The plasticizer is also removed and the polymers recycled include PVB, PET and PVC. The recycled PVB is re-utilized as an interlayer in glass articles or insulations.

The quality of the recycled polymer taught in all the disclosure is comparable to the virgin polymers. The prior art disclosures applied against present claims further teach that the recycled polymers can be re-utilized in the polymer composition either alone or with virgin polymers.

In the light of the above disclosure it would have been obvious to one of ordinary skill in that art at the time of the instant invention how to re-use the recycled polymers.

#### *Allowable Subject Matter*

9. Claims 32 and 46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Other prior art of record that is applicable against present claims includes following: BROWNSCOMBE (US 5,554,657), WALSH (US 5,594,035), HOEHN (US 5,977,294),

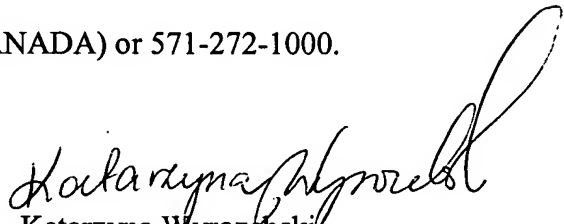
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GRUNDMANN (US 4,469,818), VANDENHENDE (US 7,056,956), BERGERON (US 6,734,216). When possible, the examiner reserves the right to utilize these disclosures as a prior art against present claims

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski whose telephone number is (571) 272-1127. The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Katarzyna Wyrozebski  
Primary Examiner  
Art Unit 1714

November 1, 2006